High Density Metal Capacitor Using Via Etch Stopping Layer as Field Dielectric in Dual-Damascence Interconnect Process

Abstract

A metal-insulator-metal (MIM) capacitor is made according to a copper dual-damascene process. A first copper or copper alloy metal layer if formed on a substrate. A portion of the first metal layer is utilized as the lower plate of the MIM capacitor. An etch stop dielectric layer is used during etching of subsequent layers. A portion of an etch stop layer is not removed and is utilized as the insulator for the MIM capacitor. A second copper or copper alloy metal layer is later formed on the substrate. A portion of the second metal layer is utilized as the upper plate of the MIM capacitor.

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